Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended	)	WT Docket No. 99-87
	)	
	)	
Promotion of Spectrum Efficient Technologies on Certain Part 90 Frequencies	)	RM-9332

To: The Commission

COMMENTS IN RESPONSE TO SECOND FURTHER NOTICE OF PROPOSED RULEMAKING

The Association of Public-Safety Communications Officials-International, Inc. ("APCO"), the International Association of Fire Chiefs, Inc., and the International Municipal Signal Association ("IAFC/IMSA"), International Association of Chiefs of Police ("IACP"), Major Cities Chiefs Association ("MCCA"), National Sheriffs' Association ("NSA"), Major County Sheriffs' Association ("MCSA"), and the National Public Safety Telecommunications Council ("NPSTC")[1] (collectively referred to herein as "Public Safety Organizations"), hereby submit the following comments in response to the Commission's *Second Further Notice of Proposed Rulemaking*, ¶27, FCC 03-34 (released February 25, 2003), 68 Fed. Reg. 42337 (July 17, 2003), in the above-captioned proceeding (hereinafter "*Second FNPRM*").

[1] The members of NPSTC include: American Association of State Highway and Transportation Officials, American Radio Relay League, American Red Cross, Association of Public-Safety Communications Officials-International, Forestry Conservation Communications Association, International Association of Chiefs of Police, International Association of Emergency Managers, International Association of Fire Chiefs, International Association of Fish and Wildlife Agencies, International Municipal Signal Association, National Association of State Emergency Medical Services Directors, National Association of State Telecommunications Directors, and National Association of State Foresters.

The Commission has adopted rules in the *Second Report and Order* in this proceeding to mandate conversion to narrowband (12.5 kHz) land mobile radio operation in the VHF High Band (150-170 MHz) and UHF band (421-512 MHz) by specific deadlines.[2] In the *Second FNPRM*, the Commission seeks comments as to whether mandatory conversion dates should also be adopted for implementation of 6.25 kHz or equivalent technology.

We believe that it is too soon to establish 6.25 kHz conversion dates, as there continue to be significant technological hurdles to overcome before 6.25 kHz operation becomes a reality. Furthermore, imposing a 6.25 kHz requirement while users are still converting to 12.5 kHz adds unnecessary confusion and could actually delay deployment of spectrum efficient technology. The danger is that some users will postpone conversion from 25 kHz to 12.5 kHz systems, with the hope that 6.25 kHz equipment will be available soon. However, as discussed below, the reality is that there continue to be uncertainties regarding the availability, and even viability, of 6.25 kHz technology for public safety communications.

Project 25, which developed a widely-followed 12.5 kHz digital interoperability standard, has also developed a "Phase II" 6.25 kHz FDMA standard.[3] However, no equipment is currently available pursuant to that standard, as manufacturers continue to address issues such as linear amplifier power levels, battery life (a critical issue for public safety personnel using portable radios on full-time and extended shifts), and frequency

[2] *Second Report and Order in WT Docket 99-87*, FCC 03-34 (released February 25, 2003), 68 Fed. Reg. 42296 (July 17, 2003). Numerous petitions for reconsideration of the *Second Report and Order* are now pending.

[3] Project 25 was formed by APCO, the National Association of State Telecommunications Directors, and agencies of the federal government to develop public safety digital interoperability standards in close cooperation with the Telecommunications Industry Association (TIA).

stability.[4] While there are TDMA technologies that may provide 6.25 kHz *equivalency* over 12.5 kHz (2-slot) or 25 kHz (4-slot) bandwidth, the Project 25, Phase II standards for those technologies are still incomplete.[5] Furthermore, while TDMA can be a very desirable technology for some large public safety radio systems, it does not meet the communication requirements for all types of public safety systems in a cost-efficient, effective manner.

Therefore, it would be premature to adopt mandatory dates for conversion to 6.25 kHz or equivalent technology until technical issues are resolved, interoperability standards are finalized, and equipment actually becomes available and is proven useful within the public safety marketplace.

The Commission must take particular care not to upset efforts to enhance interoperability across governmental lines. For example, Project 25 Phase I deployment holds great promise for improving interoperability between Federal public safety agencies (which have formally adopted it as a standard) and state and local government agencies, especially in VHF and UHF bands. However, the Federal agencies have not indicated any interest in moving to Project 25 Phase II, or other 6.25 kHz equivalent technologies.

We also believe that the Commission should pause before jumping to the conclusion that 6.25 kHz is a desirable, or necessarily more spectrum-efficient goal. For example, most public safety radio systems use a one-to-many dispatch architecture over a

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[4] A TIA TR-8 engineering committee has only recently begun review of potential modifications to the Phase II FMDA standard that might resolve some of these technical limitations on 6.25 kHz equipment.

[5] A TETRA standard that provides the equivalent of one voice channel per 6.25 kHz is available in Europe, but is not expected to be marketed in the United States.

wide area. Simulcast is the most efficient method of tying together users in such systems. However, simulcast becomes much more difficult in a 6.25 kHz environment.

Simulcasting is well understood and effectively deployed in 25 kHz and 12.5 kHz channel bandwidths. Simulcasting of 6.25 kHz FDMA has not yet been done outside of the laboratory, but we do know that the laws of physics dictate much shorter spacing between sites. With a new urban radio site today often costing upward of $1 million dollars to develop to the point that equipment can be installed, adding sites is a costly solution for public safety. Each new site also adds considerably to ongoing costs when total cost of ownership components such as power/emergency power, HVAC, building/site maintenance and related ongoing costs are included. Other physical issues such as frequency stability and increased power consumption due to the requirement for highly linear amplifiers (with ongoing impact on power bills and HVAC requirements) will require continued developmental work by the land mobile radio industry.[6]

Narrower channels also runs counter to the trend towards increased use of data communications. Data systems are more *inefficient* and costly in narrower bandwidths. For example, state-of-the-art data systems for public safety land mobile radios have a data rate of 96 kbps in a 25 kHz bandwidth. Four separate 6.25 kHz data channels transmitting at 96 kbps would have a lower total throughput, due the additional "overhead" on each channel.

[6] Project 25 Phase II is currently evaluating two different 2-slot TDMA implementations that will provide two "virtual channels" in a 12.5 kHz bandwidth. These implementations should support simulcast operation in a similar fashion to today's 12.5 kHz FDMA digital simulcast systems. Thus, there is every indication that a 6.25 kHz equivalent simulcast system architecture operating in a 12.5 kHz channel will be available within the next few years.

Therefore, we recommend that the Commission postpone adoption of specific deadlines by which public safety and private land mobile licensees must convert to 6.25 kHz or equivalent technology. Rather, the Commission should commit to revisit this issue in approximately seven years, at which point there will hopefully be more substantial information available regarding 6.25 kHz or equivalent technology, and its proven viability for public safety radio communications based upon actual operations.

CONCLUSION

For the reasons set forth, the Commission should not at this time adopt specific dates by which licensees must convert to 6.25 kHz or equivalent technology.

Respectfully submitted,

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September 15, 2003